

later. I think, therefore, that this bird must have carried its feathers 18 months.

The dried-up appearance of the small feathers of the back and wings has been already mentioned; this phenomenon, I regret to say, was not closely watched and no feathers were recovered. There is no doubt that the feathers became brown and looked like tiny shrivelled leaves. I fully intended to have had some collected, but did not act at once and the opportunity was lost. These feathers adhered to the outer surface of the wings till the moult was complete, and these were the last vestiges of the former plumage to disappear. Whether these feathers actually shrivel or whether they are slimed over and then dry up to this form must be proved by further investigation.

I am not aware that the shedding of the epidermis of the coloured portion of the mandibles of this bird has before been noticed, and I know of no parallel as a part of the moult, though the annual shedding of the wart-like excrescences on the bill of the Rough-billed Pelican (*Pelecanus trachyrhynchus*) and the shedding of the peculiar nuptial mask of the Puffin (*Fratercula arctica*), which had been described by Dr. L. Bureau (Bull. Soc. Zool. France, 1877, ii. p. 377), are well known.

5. On a Collection of Butterflies almost entirely made at Salisbury, Mashunaland, by Mr. Guy A. K. Marshall in 1898. By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c.

[Received November 2, 1898.]

The present consignment of Butterflies, with the exception of fourteen examples referable to ten species, was collected at Salisbury, and therefore is a valuable addition to the Museum series of Mashunaland Butterflies. Mr. Marshall writes:—"I think you will find one or two species among them new to the Museum collection, notably a *Baoris* and a *Kedestes*, both of which Trimen pronounced to be probably new when I first sent them to him some four years ago; but, as he has not referred to them in his recent paper, I presume he has changed his mind. This is the only example of the *Kedestes* which I have yet seen in Salisbury; I first met with it in December 1894 in the warm Mazoe valley, where I took several examples settling on low herbage on the summits of kopjes; in habits it is quite like *K. macomo*.

"I shall be glad to know the name of the unidentified *Mycalesis*; I have only met with three examples in all round Salisbury, one in April 1895, the others this year. I am somewhat in doubt as to the *Teracoli* I have sent you labelled '*pallene*,' for they are practically indistinguishable from the extreme dry form of *omphale*; yet the wet form is certainly not *omphale*, which I do not remember ever to have seen here, but seems referable to *pallene*. The larva

is very similar to, though distinct from, that of *phlegetonia* as observed by me in Natal, but they are not distinguishable in the pupal stage."

One or two other notes in Mr. Marshall's communication will be referred to in the course of this paper. One new species is now described, and two new genera.

NYMPHALIDÆ.

SATYRINÆ.

1. MYCALESIS ENA ♂, Hewits.

Salisbury, 16th April, 1898.

"Probably wet form of Trimen's *selousi*, which I wrongly supposed to be *safitza*" (G. A. K. M.). I have no doubt that Mr. Marshall is correct in this opinion, for the chief difference between the two insects consists in the prominence of the ocelli in *M. ena*, the lines crossing the wings being identical in both forms.

2. LEPTONEURA CLYTUS ♂, Linn.

Cape Town, 26th April, 1897.

This, though it has the general aspect on the upperside of the following species, is certainly not congeneric with it.

TORYNESIS, gen. nov.

Differs in neuration from *Leptoneura* in the fact that the subcostals of the secondaries are emitted from the same point instead of being well separated at their origins. The antennæ with broadly spoon-shaped, instead of cylindrical spindle-shaped, club. Palpi similar, but the second joint more arched and therefore appearing to be wider in the centre, third joint rather more acuminate.

3. TORYNESIS MINTHA Hübn.

♂ ♂, Cape Town, 22nd April, 1897.

TARSOCERA, gen. nov.

Also related to *Leptoneura*, though with more nearly the aspect of *Pseudonympha*: it chiefly differs structurally from *Leptoneura* in the expanded flattened club of the antennæ and the deflexed third joint of the palpi; the club is less spoon-shaped than in *Torynesis* and the neuration is almost identical with *Leptoneura*.

4. TARSOCERA CASSINA Butl.

♂, Cape Town, 5th October, 1896.

So far as I can see, the genus *Leptoneura* will have to be restricted to *L. clytus*, *L. oxylus*, *L. bowkeri*, and *L. dingana*.

5. PSEUDONYMPHA TRIMENI Butl.

♂ ♂, Table Mountain, 15th October, 1896.

NYMPHALINÆ.

6. CHARAXES SATURNUS Butl.

♂ ♂, Salisbury, 30th March and 3rd and 10th April, 1898.

Mr. Marshall labels one of these as “?= *laticincta* Butl.”; but it is not at all like that form, which I believe to be confined to the Nyasa district. I see nothing in Mr. Marshall's example to distinguish it from any other S. African specimens, whereas probably most of the Continental Lepidopterists would have unhesitatingly described the form *C. laticinctus* as a distinct species, instead of a common local aberration.

7. JUNONIA SESAMUS Trim. (and var. *calescens*).

Salisbury, 5000 feet (wet and dry forms), 13th February; dry form, 13th, 16th, 20th, and 23rd March, 1898.

It is quite evident, although Mr. Marshall bred *J. sesamus* from eggs laid by *J. calescens*, that both forms fly together in the wet season: it is therefore better to call *J. calescens* a dry phase than a dry-season form. One of Mr. Marshall's examples is labelled “Bred from egg laid by *P. octavia-natalensis*. Stages: Egg 13th-18th Febr., larva 19th Febr.-19th Mar., pupa 20th Mar.-4th Apr. 1898.” This specimen therefore apparently emerged on the 5th April.

I object to the name “*Precis octavia-natalensis*” for the following reasons:—*Precis* is a synonym of *Junonia*; *octavia* is a distinct West-African species; *natalensis* was a name proposed for the wet form of *P. sesamus*, under the impression that it was a variety of the Western insect, and is objectionable because the genus already contains a species named *natalica*.

8. JUNONIA ARCHESIA Cram.

♂, dry form, Salisbury, 11th May, 1898.

9. JUNONIA CUAMA Hewits.

♂ ♂, ♀ ♀, “dry form,” Salisbury, 9th, 13th, 16th, and 23rd March; 10th April, 1898.

The examples vary a good deal on both surfaces, but do not in the least resemble the following, which Mr. Marshall unaccountably labels as its “wet form” although, as usual, caught at the same time¹.

10. JUNONIA SIMIA Wallgr.

♂, “wet-form”, Salisbury, 27th February; ♀, 13th March, 1898.

11. JUNONIA BOOPIS Trim.

♀ ♀, Salisbury, 4th and 18th June, 1898.

¹ Two very distinct forms of *J. cuama* are forwarded. One of them, which is labelled “Early dry form,” seems to have appeared in the latter half of March; a more heavily marked and more round-winged form, taken a fortnight earlier, looks like its wet form; but is said to be the “First appearance of the dry form.”

12. *HAMANUMIDA DÆDALUS* Fabr.

♂, ♀, "intermediate and dry," Salisbury, 23rd March, 1898.

13. *NEPTIS AGATHA* Cram.

Salisbury, 11th and 22nd May, 1898.

ACRÆINÆ.

14. *ACRÆA SERENA*, var. *BUXTONI* Butl.

♂ ♂, Salisbury, 16th February and 24th April, 1898.

15. *ACRÆA RAHIRA* Boisd.

♂ ♂, Salisbury, 4th May, 1898.

16. *ACRÆA NOHARA* Boisd.

♂ ♂, ♀ ♀, Salisbury, 8th and 11th January; 5th, 20th, and 23rd March; 3rd, 10th, 16th, 24th, and 27th April; 11th, 14th, 19th, 22nd, and 29th May; 4th and 18th June.

Some of the specimens are labelled "wet" and some "dry," but I see no appreciable difference between them. As before, the whole are labelled with a varietal name, apparently because in the Mashunaland and Swaziland examples the black spots on the upper surface tend to become smaller than in examples from Natal. I must confess I do not think the name is needed.

17. *ACRÆA DOUBLEDAYI*, var. *AXINA* Westw.

Salisbury, "wet and dry forms," 5th, 13th, 23rd, and 26th March; 9th and 27th April; 11th May; 5th June, 1898.

In this form (the seasonal phases of which do not seem to me to differ) the two or three submarginal dots which usually occur on the primaries of typical *A. doubledayi* are replaced by a continuation of the internervular streaks; the female also rarely shows the subapical white bar of typical *A. doubledayi*; it would therefore seem that *A. axina* is a smaller and localized form of *A. doubledayi*, but intergrades between the two types occur in our Museum series.

18. *ACRÆA ANACREON*, var. *BOMBA*.

♂ ♂, ♀ ♀, "wet and intermediate," Salisbury, 2nd January, 19th February, 9th and 16th March, 1898.

I see nothing to distinguish the "intermediate" from the wet form; our intermediate form from Nyasaland shows the fulvous submarginal spots of typical (dry-season) *A. anacreon*. I am, however, grateful to Mr. Marshall for sending us examples of the wet form in each collection, inasmuch as we did not possess it at all until 1895. One of the males now sent has almost lost the black spots on the primaries; a similar but smaller female example was obtained by Mr. Marshall on the 14th August, 1895, at Gijima (*vide* P. Z. S. 1898, p. 191).

19. *ACRÆA NATALICA* Boisdu.

♂ ♂, Salisbury, 2nd and 6th March, 1898.

20. *ACRÆA VIOLARUM* and var. *ASEMA* Hewits.

♂, ♀ ♀, Salisbury, 5th March; 9th, 24th, and 27th April, 1898.

These, which represent typical *A. asema* (and should therefore, according to Mr. Marshall, be the dry form of *A. violarum*), are labelled "*violarum-asema*," but a female obtained on the 5th March, which is almost as heavily marked as typical *A. violarum*, is labelled also in the same way though marked with the "wet" sign. To my mind it belongs to the intermediate form, and I think conclusively proves that *A. asema* is only a form of *A. violarum*.

21. *ACRÆA CALDARENA* Hewits.

♂ ♂, ♀ ♀, Salisbury, 19th February; 2nd, 13th, 20th, 23rd, and 26th March; 20th and 30th April; 11th and 14th May; 5th June, 1898.

The seasonal differences appear to be slight in this species: the male seems to differ only in the better marked border to the secondaries in the wet-season, and the female in its smoky suffusion sometimes accompanied by a white belt across the primaries; but at all seasons there seems to be a certain amount of variation even in these characters, though the clouded females do not, apparently, occur in the dry season. A male with very dry characteristics and labelled with Mr. Marshall's dry sign ♂ was taken on the 26th March, and much wetter forms in April, when a wet male and dry female were taken on the same day. It seems to me that these facts are clearly in favour of my view that the seasonal forms of butterflies existed originally as simple variations, and were subsequently accommodated to seasons which afforded them most protection. Thus the males of *A. caldarena*, which show no striking seasonal differences, and which would be hardly more conspicuous at one season than another, are inconstant in their seasonal characters, whereas if the white-banded, smoky female appeared in the dry season it would probably be very conspicuous.

It may be questioned as to what advantage a protected Butterfly, such as an *Acraea*, could gain by being inconspicuous. Although the species of this genus are said to be not only offensive, but elastic and difficult to kill, it is certain that many are permanently maimed by birds and reptiles which (presumably) seize them for the first time, or have not become satisfied of their inedibility.

LYCENIDÆ.

22. *ALÆNA NYASSÆ* Hewits.

Salisbury, 3rd and 16th April, 15th May, 1898.

One of the males, having white spots in the cell, was wrongly labelled ♀.

23. *ALÆNA AMAZOULA* Boisd.

Salisbury, 13th, 16th, and 20th March, 1898.

Judging by the specimens now sent and one or two previously in the collection, the Mashunaland examples seem to be decidedly larger than those of Natal.

24. *CATOCHRYSOPS HYPOLEUCUS* Butl.

♂. Gadzima, 4200 feet, Umfuli River, Mashunaland, 28th December, 1895.

This is forwarded under the name of "*C. gigantea* Trim.," but, as already pointed out, my typical female of *C. hypoleucus* being identical with this species, my name cannot be set aside. Mr. Trimen supposed the type to be a worn female from Zomba, but that example was far too imperfect to base a description upon: I therefore labelled and described the far more perfect female from the Victoria Nyanza. If I could do so, I would willingly yield the point; but one cannot alter the identity of a type.

25. *CATOCHRYSOPS MAHALLOKOÆNA* Wallgr.

♀ ♀, Salisbury, 28th March and 3rd April; ♂, 19th May, 1898.

26. *NEOLYCÆNA CISSUS* Godt.

♀, Salisbury, 28th March, 1898.

27. *TARUCUS THEOPHRASTUS* Fabr.

♀, Salisbury, 19th February; ♂, 28th March, 1898.

Labelled as *T. sybaris*; but, if distinct from *T. theophrastus* (which I doubt), it cannot be *T. sybaris*.

28. *NACADUBA SICHELA* Wallgr.

♂, Salisbury, 19th May, 1898.

29. *ZIZERA ANTANOSSA* Mab.

♀, Salisbury, 19th May, 1898.

30. *CASTALIUS CALICE* Hopff.

♀, Salisbury, 14th May, 1898.

31. *LYCÆNESTHES ADHERBAL* Mab.

♀ ♀, Salisbury, 14th May and 4th June, 1898.

32. *CACYREUS LINGEUS* Cram.

♂ ♂, Salisbury, 3rd April and 19th May, 1898.

33. *ZERITIS AMANGA* Westw.

♂, Salisbury, 10th April, 1898.

34. *ZERITIS HARPA* Fabr.

♂ ♂, Salisbury, 30th March, 1898.

35. PHASIS THERO Linn.

Cape Town, 5th October, 1896.

A very dwarfed example of this rare species.

36. ASLAUGA MARSHALLI, sp. n.

♀. Allied to *A. purpurascens*, Holland; with more pronounced anal lobe to secondaries: upper surface altogether darker, vinous brown suffused with blackish, with faint purple gloss on basal half; fringes dull white with dusky central band, blacker and somewhat irregular on primaries and interrupting the outer white edging here and there, notably at the extremity of the anal lobe of secondaries, where it becomes quite black: thorax slate-blackish; head and abdomen mostly brown: under surface fleshy clay-brown, irrorated with darker brown; internal area of primaries greyish; fringes rather less strongly banded than above: pectus and base of venter dull white, legs and remainder of venter paler brown than the wings¹. Expanse of wings 32 millim.

Salisbury, 4th June, 1898.

In the West-African *A. purpurascens* there is a well-defined brown line across the under surface of the wings and the upper surface is considerably paler.

37. THESTOR PROTUMNUS Linn.

Simonstown, 30th December, 1896.

38. ALCEIDES MALAGRIDA Trim.

Signal Hill, 22nd February, 1897.

39. MYRINA FICEDULA Trim.

Salisbury, 26th February and 6th March, 1898.

40. APHNÆUS ERIKSSONII Trim.

♂, Gadzima, 13th September, 1895.

This fine and rare species is quite new to the Museum; it is a typical *Aphnæus*, although, strangely enough, the usual silver patches are wholly absent from the under surface.

41. VIRACHOLA LIVIA Klug.

♂, Salisbury, 15th May, 1898.

PAPILIONIDÆ.

PIERINÆ.

42. MYLOTHRIS AGATHINA Cram.

♂, Salisbury, 19th May, 1898.

¹ The sides of the abdomen appear to be banded with black, but this may have been produced by grease.

43. TERIAS BRIGITTA Cram.

Wet form. Salisbury, 6th March; 2nd, 3rd, and 6th April, 1898.

Dry form. Salisbury, 14th, 19th, and 22nd May, 1898.

I was pleased to receive a male of the dry-season form, which seems to be much rarer than the wet-season male.

44. TERIAS HAPALE Mab.

♂. *Wet-season form.* Salisbury, 16th February, 1898.

A second male (indicated as a var. in the direction of *floricola*) was obtained on the 11th May! This seems to indicate that the wet phase may sometimes occur in the dry season.

♂. *Intermediate form.* Salisbury, 30th March, 1898.

♂. *Dry form.* Salisbury, 4th, 17th, and 20th April, 1898.

Mr. Marshall writes:—"You will notice among the *Terias* that I have pointed out that *T. aethiopica* and *butleri* of Trimen are respectively dry and wet forms of the same species, and thus, taking the synonymy given in your revision, *hapale* must fall as a seasonal form of *senegalensis*. I have not actually proved the case by breeding, but I think you can take my observations on trust now."

Unfortunately Mr. Marshall's dates (upon the specimens forwarded) seem to point to a different conclusion; for he sends wet, intermediate, and dry examples of true *T. hapale*=*aethiopica*, with the signs ♂, ♂, ♂ on their labels, and taken in February, March, and April respectively. Of *T. senegalensis*(=*butleri*) he also sends wet forms taken from February to March and intermediate to dry forms obtained in March and April. Therefore, although *T. floricola* and *T. hapale* may prove to be only variations of the heavily-bordered species, analogous to the narrow-bordered variations of *T. suasa*, there is, at present, no proof that such is the case, and it certainly is not correct to call *T. hapale* the dry form of *T. senegalensis*, because each of these types has its proper seasonal phases.

45. TERIAS SENEGALENSIS Boisd.

Wet form. ♂ ♂, ♀, Salisbury, 16th February, 6th and 16th March, ♀ 3rd April.

Intermediate to dry. Salisbury, 6th and 13th March, and 2nd to 3rd April.

The extreme dry form was not forwarded: it is represented by *T. bisinuata*.

46. TERACOLUS JOHNSTONI Butl.

Intermediate form. ♀, Salisbury, 22nd May, 1898.

47. TERACOLUS PHLEGYAS Butl.

Wet form. ♂, Salisbury, 19th May, 1898.

Dry form. ♂, ♀, Salisbury, 5th and 18th June, 1898.

I should regard the male of Mr. Marshall's dry form as

“intermediate”: we have a much more pronounced dry-season male.

48. TERACOLUS ANTIGONE Bois.

Intermediate and dry forms. ♂ ♂, ♀, Salisbury, 19th and 22nd May; 5th and 18th June, 1898.

Mr. Marshall labelled two females of *T. ithonus* (var. *hyperides*) as “*T. phlegetonia*” = *antigone*: one example of the intermediate form is labelled with the wet sign ♂, but was taken on the same day as another marked ♂, and differs from the true wet form in the total absence of the bright lemon-yellow at the base of the primaries on the under surface and the reddish tint of the secondaries; this must, therefore, have been a *lapsus*, for it is not likely that wet, intermediate, and dry forms (in equal condition) would all be flying within less than a week of each other. The single female obtained, though taken on the 5th June, belongs to the intermediate phase.

49. TERACOLUS ITHONUS Butl.

Wet form. ♂, Salisbury, 9th March, 1898.

Intermediate. ♀ ♀, Salisbury, 22nd and 29th May, 1898.

Dry form. ♂, Salisbury, 5th June, 1898.

The two males are labelled as *T. achine* (intermediate and dry) and the two females as *T. evagore-phlegetonia* (intermediate and dry). The male obtained in March is, however, the typical wet form of *T. ithonus* (= *hero* ♂); the two females obtained in May are the intermediate form of the same species (= *T. hyperides* ♀); and the male obtained in June is the dry form (= *T. ignifer* ♂).

50. TERACOLUS OMPHALE Godt.

Intermediate and dry forms. ♂ ♂, ♀ ♀, Salisbury, 19th, 22nd, and 29th May, 5th and 18th June, 1898.

Mr. Marshall labels all the specimens as “*T. pallene*”; he writes as follows:—“I am somewhat in doubt as to the *Teracoli* I have sent you labelled *pallene*, for they are practically indistinguishable from the extreme dry form of *omphale*; yet the wet form is certainly not *omphale*, which I do not remember ever to have seen here, but seems referable to *pallene*. The larva is very similar to, though distinct from, that of *phlegetonia* as observed by me in Natal, but they are not distinguishable in the pupal stage. I obtained some thirty eggs from marked females of ? *pallene*, intending to submit the moulting larvæ to varying conditions in order to ascertain the range of its specific variation: a large number of eggs proved infertile and of the remainder all the larvæ died before they were half-grown—why I know not.”

I do not believe that *T. pallene* occurs so far to the south as Mashunaland; but in none of its seasonal forms does it resemble *T. omphale*; indeed it belongs to the same section of the genus as *T. daira*. The wet form of *T. omphale* may vary more than is at

present supposed, though our large series shows a considerable range of variation already, but I have not the least doubt that the examples labelled in the present collection "*Teracolus pallene*" are ordinary *T. omphale*.

51. CATOPSILIA FLORELLA Fabr.

♂, ♀, Salisbury, 27th April, 1898.

52. BELENOIS SEVERINA Cram.

♂ ♂, Salisbury, 19th and 30th March.

Labelled as "wet" and "intermediate"; there is, however, a considerably wetter phase of the species. I should therefore consider both specimens as intermediate.

HESPERIIDÆ.

53. SARANGESA SYNESTALMENUS Karsch.

Salisbury, 16th March, 2nd and 30th April, 19th May, 1898.

Mr. Marshall labels this *S. motozioides*, but the latter is much nearer to *S. motozi*. If these nearly related insects were arranged in natural sequence they would stand thus:—*S. pertusa*, *S. synestalmenus*, *S. motozi*, *S. motozioides*, *S. eliminata*. I am quite prepared to hear that they are only forms of one species, but the chances are that *S. motozioides* and *S. eliminata* will hold their own and that *S. pertusa* and *synestalmenus* will prove to be slight variations of the dry form of *S. motozi*; the latter seems to be a wet form in Nyasaland.

54. ABANTIS VENOSA Trim.

♂, Salisbury, 10th April, 1898.

55. PYRGUS SATASFES Trim.

Salisbury, 7th August, 1898.

Labelled "? *diomus*, Hpff. ♂." The latter is quite distinct.

56. PYRGUS DROMUS Plötz.

♂, Salisbury, 9th March, 1898.

57. PYRGUS SPIO Linn.

♀, Salisbury, 26th March, 1898.

58. PAROSMODES ICTERIA Mab.

♂ ♂, Salisbury, 12th March and 20th April, 1898.

59. KEDESTES MACOMO Trim.

Salisbury, 10th April, 1898.

Mr. Marshall sends this as a new species; but it only differs from typical *K. macomo* in the absence of some of the black spots on the under surface of the secondaries: such differences are hardly likely to have a specific value, but it would be interesting

to see whether the examples obtained in the Mazoe valley were quite constant as regards the number of spots; in the three examples of *K. macomo* which Mr. Marshall sent us in 1897 they differ in size, though not in number.

60. *GEGENES LETTERSTEDTI* Wallgr.

♂, Salisbury, 14th May, 1898.

61. *GEGENES HOTTENTOTA* Latr.

♂ ♀ *in copulá*, Salisbury, 19th February; ♂ 14th May, 1898.

It would be interesting to breed this species so as to decide definitely whether the preceding is readily distinct; until the case is proved it is hard to believe that the large sexual patch on the male *G. hottentota* (= *obumbrata*) is not of specific value.

62. *CHAPRA MATHIAS* Fabr.

♀, Salisbury, 19th May, 1898.

63. *PARNARA DETECTA* Trim.

♂ ♂, Salisbury, 12th, 13th, and 30th March; 9th and 10th April; ♂, ♀, 5th and 18th June, 1898.

The last two specimens are labelled "*Baoris* sp. nov."; but, excepting that they have lost two out of the three subapical hyaline dots on the primaries, I see no character by which they could be distinguished from *P. detecta*, and we know that these hyaline dots are exceedingly variable in number.

64. *PLATYLESCHES MORITILI* Wallgr.

♂ ♂, Salisbury, 20th February, 9th March, 11th April, and 5th June, 1898.

65. *RHOPALOCAMPTA PISISTRATUS* Fabr.

Salisbury, 18th June, 1898.

6. Third Report on Additions to the Lizard Collection in the Natural-History Museum¹. By G. A. BOULENGER, F.R.S.

[Received November 15, 1898.]

(Plates LV.-LVII.)

I. *List of the Species, new or previously unrepresented, of which specimens have been added to the Collection since 1894.*

(An asterisk indicates type specimens.)

*1. *Ceramodactylus pulcher* Anders. Herp. Arab. p. 19 (1896).—S. Arabia (*Anderson*).

2. *Ceramodactylus damæus* Lucas & Frost, Proc. R. Soc. Vict. (2) viii. 1895, p. 1.—C. Australia (*Spencer*).

¹ Cf. P. Z. S. 1894, p. 722.